Exploring Survey Data for Historical and Anthropological Research

Nolte, Insa; Jones, Rebecca; Taiyari, Khadijeh; Occhiali, Giovanni

DOI:
10.1093/afraf/adw035

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
Nolte, I, Jones, R, Taiyari, K & Occhiali, G 2016, 'Exploring Survey Data for Historical and Anthropological Research: Muslim-Christian relations in south-west Nigeria', *African Affairs*, vol. 115, no. 460, pp. 541-561. https://doi.org/10.1093/afraf/adw035

African Affairs, 115/460, 541–561 doi: 10.1093/afraf/adw035

Advance Access Publication 27 July 2016

RESEARCH NOTE

EXPLORING SURVEY DATA FOR HISTORICAL AND ANTHROPOLOGICAL RESEARCH: MUSLIM–CHRISTIAN RELATIONS IN SOUTH-WEST NIGERIA

INSA NOLTE, REBECCA JONES, KHADIJEH TAIYARI AND GIOVANNI OCCHIALI*

ABSTRACT

This research note argues that quantitative survey data on Africa, welcomed by most researchers in public health, economics, and political science, can make an important contribution to the work of historians and anthropologists, especially if it is open to critical analysis. The research note describes the 2012–13 'Knowing Each Other' survey on religion among the Yoruba of south-west Nigeria, which provides strong evidence for a slow shift from Islam to Christianity in the area since 1963, and reflects on the methods and challenges of carrying out the survey and the resulting biases within it. In doing so, the research note draws out lessons on how to use surveys for historical and anthropological research. It also shows how using surveys contributes to understanding the complex and unexplored dynamics of Muslim–Christian relations in Nigeria from the perspectives of locality, age, and gender.

*Insa Nolte (m.i.nolte@bham.ac.uk) is Reader in African Studies, Rebecca Jones (r.k.jones@bham.ac.uk) is Postdoctoral Research Fellow, and Giovanni Occhiali (GXO214@bham.ac.uk) is Statistical Research Fellow, all at the University of Birmingham. Khadijeh Taiyari (khadijeh.taiyari.10@ucl.ac.uk) is a PhD student at University College London. The authors gratefully acknowledge funding by the European Research Council (ERC) for a Starting Researcher Grant entitled 'Knowing Each Other: Everyday religious encounters, social identities and tolerance in south-west Nigeria' (Grant agreement no. 283466, PI Insa Nolte). The authors thank Christian Hennig and Ioannis Kosmidis for commenting on some of the statistical concerns arising from the material. They are grateful for the comments made by participants in the African History Seminar at the School of Oriental and African Studies, London, the Africa Seminar at the School of Advanced International Studies, Washington, and the African History and Politics Seminar at the University of Oxford, where earlier versions of this article were presented by Insa Nolte. J. D. Y. Peel and two anonymous reviewers of the article have provided helpful comments on an earlier draft.

SCHOLARSHIP ON AFRICA HAS BEEN SHAPED in very specific ways by the poverty of quantitative data, compared with the data wealth that informs debates about many other parts of the world. As Morten Jerven has pointed out, the implications of data poverty for economic policy making are potentially dramatic.[1] Washington-based institutions such as USAID, Afrobarometer, and the Pew Forum have produced important survey work on public health, elections, political attitudes and processes, and religion since the 1990s. As reports on measurable conditions of life and reflections of public opinion, these surveys have been welcomed enthusiastically by researchers in public health, economics, and political science, but they have been largely ignored by historians and anthropologists. Focusing on the 'Knowing Each Other' (KEO) survey on religion, this research note demonstrates that a critical engagement with quantitative data can also offer a significant contribution to disciplines that rely primarily on discursive analysis, particularly in terms of suggesting hypotheses or relationships for more fine-grained investigation. Importantly, the KEO survey provides evidence for a slow shift from Islam to Christianity in south-west Nigeria since 1963. But beyond this, a critical discussion of the production of survey data on the ground, and the resulting flaws and biases of the survey, contributes to an understanding of the complex and hitherto unexplored dynamics of Muslim–Christian relations in Nigeria from the standpoints of locality, age, and gender. The first lesson we suggest in this research note is that the processes and problems of conducting a survey itself, as well as its analysis, offer important insights into the social reality of a country or region.

The challenges associated with data collection in many African contexts are rarely discussed openly, whether it is quantitative or qualitative research.[2] As Jerven has pointed out, many African social and political practices can only be captured partially through formal processes.[3] Often, data collection is also limited by entrenched political or economic interests, or by the difficulty of gaining direct access to sections of the population living in areas that are difficult to access or are under the control of groups and leaders that discourage the collection of information. Moreover, in some contexts, survey data in Africa have been associated with the production of false responses. Several anonymous interlocutors who had commissioned or participated in the execution of surveys in Nigeria and other West African countries in the past

1. Morten Jerven, *Poor numbers: How we are misled by African development statistics and what to do about it* (Cornell University Press, Ithaca, NY, 2013); Morten Jerven, 'Research note – Africa by numbers: Reviewing the database approach to studying African economies', *African Affairs*, 115, 459 (2016), pp. 342–58.
2. Cf. Christopher Cramer, Deborah Johnson, Carlos Oya, and John Sender, 'Research note – Mistakes, crises, and research independence: The perils of fieldwork as a form of evidence', *African Affairs* 115, 458 (2015), pp. 145–60.
3. Jerven, *Poor numbers*, esp. pp. 45–54.

spoke to us about their suspicions of data falsification and their personal experience of survey teams filling in questionnaires or paying urban audiences to complete surveys destined for rural, remote, or ostensibly dangerous areas. But even when surveys had to be re-fielded following such problems, the potential impact of these difficulties on the data is rarely discussed. In this research note we describe how we anticipated and addressed some challenges in our own survey work, and we also explain in what ways the difficulties that arose from our specific approach and focus contributed to the survey's biases. Paying critical attention to these issues is another important lesson: both for the production of accurate and reliable survey data, as well as for a broader understanding of dynamics related to gender, age, religion, class, and so on.

In addition to the collection of data, the production of reliable survey results requires a sampling frame representative of the surveyed population. Owing to the overall data poverty of many African countries, there is little agreement or even debate on appropriate sampling frames, which means that the quality of newly produced data cannot be assessed precisely. While many institutions (and the survey companies on which they rely) base their work on ready-made sampling frames, the processes by which these frames are constituted are not always discussed openly. This makes it difficult to say to what degree survey responses are representative for all those not included in the survey, and it closes possible avenues for critical interrogation. This research note suggests that the exploration of different sampling frames for calibration offers a useful base both for the confirmation of findings and for critical reflection and analysis. The manner in which this was done in the problematic context of religious affiliation and belief in Nigeria may offer some suggestions or lessons for future survey design in other areas and on other topics.

Finally, again like qualitative research, survey data reflect biases through the way in which questions are framed and responses are elicited. Survey data always echo the inequalities, concerns, and preoccupations shaping the lives of survey producers and respondents, but this does not mean that surveys should be dismissed. The contextual biases of historical surveys in Africa have been explored as evidence in their own right.[4] Additionally, the fact that 'it is difficult not to think in terms of the ontologies that are globally dominant in one's own time'[5] undoubtedly shapes all forms of academic enquiry. The KEO survey data do not engage

4. See, for example, Lorelle D. Semley, *Mother is gold, father is glass: Gender and colonialism in a Yoruba town* (Indiana University Press, Bloomington, IN, 2011), Chapter 5; Helen Tilley, *Africa as a living laboratory: Empire, development, and the problem of scientific knowledge, 1870–1950* (University of Chicago Press, Chicago, IL, 2011).

5. Peter Pels, 'What has anthropology learned from the anthropology of colonialism?', *Social Anthropology/Anthropologie Sociale* 16, 3 (2008), pp. 280–99: p. 283.

substantially with current reflections on the nature of Yoruba Islam and Christianity as local expressions of global religions,[6] and the very focus of this research note – the overall shift in religious identification from Islam to Christianity – was not originally planned. However, once our pilot study revealed that such a shift might have taken place (see below), we adjusted our research to take account of it, and we consider the resulting findings a valuable contribution to the study of how gendered and generational social identities in Yorubaland reflect the coexistence of Islam and Christianity. The lesson from this is that whilst surveys should not be treated as unproblematic expressions of 'the truth', they can also provide systematic insights into the lifeworlds of large numbers of respondents in ways that make unexpected findings possible and provocative arguments more credible.

In existing survey work, the reluctance to discuss methodological difficulties often leads to the silencing of unexpected research results. For example, the results of an Afrobarometer survey that suggested a shift from Islam to Christianity in south-west Nigeria similar to that revealed by the KEO survey were never published in textual form.[7] In other contexts, the unwillingness to discuss methodologies in detail has led to the production of contradictory data, which can entail all sorts of hidden problems for subsequent researchers. For example, the Pew Forum suggested that Nigeria had a Muslim majority of 52 percent, confirming the stronger historical presence of Islam revealed by censuses in the 1950s and 1960s and taking account of the fact that Christianity had expanded more strongly among remaining non-monotheists.[8] A year later, the same institution noted that with just under 48 percent of the population identifying as Muslim, the country had 'no clear religious majority'.[9] The Pew Forum's adjustment of its own numbers reflected the results of a larger-scale public health survey by the National Population Commission that indicated a Christian majority among its respondents.[10] As neither this process not the quality of the new data were discussed in an open and easily accessible manner,[11] the apparently

6. J. D. Y. Peel, *Christianity, Islam, and Orisa-religion: Three traditions in comparison and interaction* (University of California Press, Oakland, CA, 2016).
7. The relevant dataset is available but the findings are neither highlighted nor published in a report. Personal communication with Peter Lewis, School of Advanced International Studies, Washington, 25 November 2013.
8. Pew Forum, 'Tolerance and tension: Islam and Christianity in sub-Saharan Africa', 2010, <http://www.pewforum.org/files/2010/04/sub-saharan-africa-full-report.pdf> (11 February 2014), pp. 12, 20.
9. Pew Forum, 'The future of the global Muslim population', 2011, <http://www.pewforum.org/files/2011/01/FutureGlobalMuslimPopulation-WebPDF-Feb10.pdf> (5 October 2015), p. 110.
10. National Population Commission, *Nigeria demographic and health survey 2008* (Federal Republic of Nigeria, Abuja, 2009).
11. The *Nigeria demographic and health survey 2008* noted that less than 45 percent of its respondents were Muslim while 54 percent were Christian. But while the National Population Commission's datasets are the largest that included religion in Nigeria, its public-

contradictory survey findings were largely ignored. However, both surveys assured readers that levels of conversion between monotheist religions were low,[12] and most scholars assumed that where people had already converted to Islam and Christianity, they were unlikely to have changed religion again.

This mistaken assumption contributed to the KEO survey's strong bias towards the southern parts of south-west Nigeria, because it informed our original decision to carry out the survey in twelve geographically contingent local government areas in Lagos, Ogun, and Ondo states, whose religious composition had been similar to that of south-west Nigeria as a whole in the 1960s. Although we later included six local-government areas from northern Nigeria, the raw survey data retain a strong bias towards southern Yorubaland. Moreover, the social context in which we carried out the survey contributed to a small under-representation of young respondents and an over-representation of women. Adjustment for the socio-demographic biases within the survey illustrates that the overall shift towards Christianity reflects geographical, gendered, and generational differences that invite historical and anthropological reflection, while also revealing social constellations that continue to favour Islam. A tentative reflection on the different survey biases suggests that both Muslim and Christian identities are shaped by the differential formation of religious and political communities, the historical association of Western education and Christianity, and interpersonal dynamics shaped by patrilineal patterns of belonging and gendered forms of authority in marriage and family life.

The next section explains how the survey was designed and adjusted to produce these controversial findings about a shift toward Christianity in the region. As such it shows how a well-designed survey – when the flaws, limitations, and biases are acknowledged – can open up important new lines of empirical enquiry for subsequent researchers.

The Knowing Each Other survey: conception, organization, and biases

The KEO survey was conceived in order to contribute to the emerging field of research on religious and especially Muslim–Christian encounters in Africa by focusing on the Yoruba of south-west Nigeria.[13]

health surveys exclude important sections of the population by age, making an extrapolation for the national level problematic. National Population Commission, *Nigeria demographic and health survey 2008*, p. 31.

12. Pew Forum, 'Tolerance and tension', p. 66.

13. Cf. Benjamin Soares (ed.), *Muslim-Christian encounters in Africa* (Brill, Leiden, 2006); Shobana Shankar, *Who shall enter paradise? Christian origins in Muslim northern Nigeria, ca. 1890–1975* (Ohio University Press, Athens, OH, 2014); Peel, *Christianity, Islam, and Orisa-religion*.

Yoruba speakers converted in significant numbers to both Islam and Christianity during the twentieth century. The 1952 census in the area of the present-day states of Ekiti, Kwara, Lagos, Ogun, Ondo, Osun, and Oyo indicated a slightly larger Muslim (43.3 percent) than Christian (38 percent) population.[14] However, by the time of the 1963 census (the last to include information on religious identification in Nigeria), percentages of Yoruba Muslims and Christians were, with 46.3 percent and 45.5 percent respectively, roughly equal.[15] While both censuses were criticized for distorting regional population numbers, there has been no suggestion that numbers of Muslims and Christians within individual regions were manipulated.[16] Without data suggesting otherwise, the assumption that the equal numerical presence of both religions contributed to the overall peaceful relations between Muslims and Christians has buttressed much of the reflection on Yoruba Muslim–Christian relations.

As the first large-scale survey of religious identification in Yorubaland since 1963, the KEO survey aimed at providing insight into the incidence of bi- and multi-religious constellations including Muslims, Christians, and traditionalists in different social contexts, and it invited respondents to comment on typically ethnographic topics including kinship, marriage, everyday practices, and moral expectations.[17] Reflecting a shared research interest in the history and anthropology of coastal Yorubaland by Insa Nolte and Olukoya Ogen, the survey originally included twelve local government areas in the southern Lagos, Ogun, and Ondo states. As explained above, the area's religious composition was roughly equivalent to that of Yorubaland as a whole in the 1952 and 1963 censuses, and we had planned the survey in a geographically contingent area as a basis for further, in-depth qualitative research in the future.

14. 'Other' religious identities were reported for 18.6 percent of the population. These numbers are calculated for the present-day Ekiti, Kwara, Lagos, Ogun, Ondo, Osun, and Oyo states (also covered by the KEO survey) on the basis of the calculations in Philip Ostien, 'Percentages by religion of the 1952 and 1963 populations of Nigeria's present 36 states' (Nigerian Research Network Background Paper No. 1, Queen Elizabeth House, Oxford, 2012).

15. 'Other' religious identities were reported for 8.2 per cent of the population. These numbers are calculated for the present-day Ekiti, Kwara, Lagos, Ogun, Ondo, Osun, and Oyo states (also covered by the KEO survey) on the basis of the calculations in Ostien, 'Percentages by religion'.

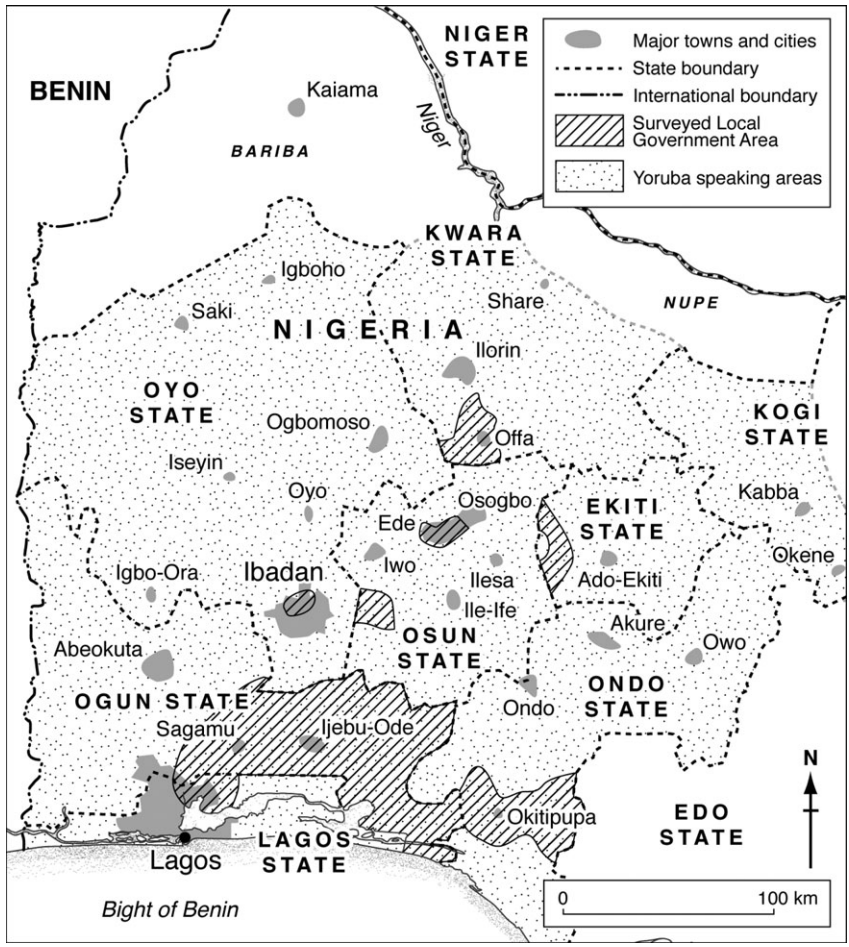
16. Cf. S. A. Aluko, 'How many Nigerians? An analysis of Nigeria's census problems, 1901–63', *Journal of Modern African Studies* 3, 3 (1965), pp. 371–92; Babatunde A. Ahonsi, 'Deliberate falsification and census data in Nigeria', *African Affairs* 87, 349 (1988), pp. 553–62.

17. For a first discussion of the survey, see Insa Nolte and Rebecca Jones, 'The Knowing Each Other survey', 6 November 2014, <http://www.knowingeachother.com/2014/11/06/the-knowing-each-other-survey/> (1 June 2015).

Table 1. Locations of the KEO survey

State	Number of local-government areas	Names of local-government areas	Location of survey	Urban/rural
Lagos	1	Ikorodu	Ikorodu (Lagos)	urban
Ogun	9	Remo North	Ode, Iraye, Ilara	rural
		Ikenne	Ikenne, Irolu, Iperu	rural
		Remo South	Sagamu town	urban
		Odogbolu	Odogbolu town	urban
		Ijebu-Ode	Ijebu-Ode town	urban
		Ijebu North	Ijebu-Igbo town, Ago-Iwoye, Awa	urban/rural
		Ijebu North East	Atan, Odosenlu, Odosimadegun	rural
		Ijebu East	Ogbere, Ijebu-Ife, Ijebu-Imusin	rural
		Ogun Waterside	Abigi, Efire	rural
Ondo	2	Okitipupa	Okitipupa town, Ilutitun	urban/rural
		Irele	Ode Ajagba	rural
Osun	3	Irewole	Ikire	rural
		Ede North	Ede town	urban
		Ede South	Ede town	urban
Oyo	1	Ibadan North	Agbowo (Ibadan)	urban
Ekiti	1	Ekiti West	Ikogosi, Aramoko	rural
Kwara	1	Offa	Offa town	urban

The survey questionnaire was developed in several iterations, and the final version was agreed after a pilot study in two local government areas in Osun State (Ede North and Ede South) was completed, which means that data from these two areas are not completely consistent with those from the other 16 local government areas.The pilot study also suggested that the assumption of stability in Muslim–Christian relations was not realistic, and in response we expanded the survey and obtained responses from an additional six local government areas from the northern Ekiti, Kwara, Osun, and Oyo states. We based the number of responses collected in every area on the official – if disputed – overall population numbers of the 2006 population census, but, for reasons set out below, did not always achieve exact calibration by age and gender. Between April 2012 and August 2013, 2,819 respondents from 18 local government areas in the seven predominantly Yoruba-speaking states contributed to the survey. Table 1 and Map 1 illustrate the survey's bias towards southern Yorubaland.



Map 1. The KEO survey in south-west Nigeria.

As Table 1 shows, the local-government areas in southern Yorubaland are balanced roughly equally between rural areas and medium-sized towns, such as Ijebu-Igbo, Ijebu-Ode, Ikorodu, Odogbolu, Okitipupa, and Sagamu. However, the northern local-government areas are predominantly urban and include Ibadan, Ede (two areas), and Offa.[18] While only two

18. Setting the cut-off point at roughly 100,000 inhabitants, we recognize that several of the localities we have designated as rural are large settlements. In the absence of population numbers for the towns (rather than the LGAs in which they are situated, or of which they are part) our categorization also reflects the presence of secured hotels, closed shops (rather than market stalls), the local presence of traders in motor parts (rather than mechanics), books, and other goods associated with distinctly urban consumption such as electronics.

local-government areas cover the large and densely populated cities of Lagos and Ibadan, the higher population numbers of many urban local-government areas mean that the survey is dominated by responses from medium-sized urban environments. It is difficult to assess in what way this bias influences survey results until better contextual data are produced.

Finally, our only sample for Oyo State is a local government area in Ibadan North, which has attracted a number of Christian residents associated with the University of Ibadan. Oyo State comprises of many historically Muslim towns, including large cities like Oyo and Ogbomoso, and our sample for the state is therefore likely to over-represent Christians.[19] Conversely, in Osun State, the survey was carried out in three strongly Muslim local-government areas, even though the state also has a significant Christian population centred on the cities of Ile-Ife and Ilesa.[20] It is therefore likely to be biased towards Muslims. It is impossible to assess how these two biases at state level affect the overall survey result until better data are produced.

The survey team included male and female members, all of whom were trained in research methods, including ethically required protocols.[21] All team members were closely supervised and monitored throughout the fielding of the survey by Olukoya Ogen and Insa Nolte.[22] The team included members of both Muslim and Christian backgrounds, and great care was taken to ensure that no team member showed any reservation regarding traditional practices, and that everyone could pronounce the traditional Yoruba proverbs and sing the traditional songs included in the questionnaire. Team members also kept fieldwork diaries in which they noted their experiences and observations.

Respecting local norms, Nolte and Ogen visited all survey locations to obtain permission for the survey from local government offices and, where applicable, the traditional head of the settlement. Only when all stakeholders had granted permission did team members move into the relevant locality. In several towns and villages Nolte and Ogen also recruited additional team members whose knowledge of the locality enabled the team to move more freely. Team members visited compounds, houses, or institutions early in the morning or afternoon in order to be able to explain and obtain permission for their work from the heads of compounds or other decision makers. While team members consistently encouraged

19. Oyo Division (which included Oyo and Ogbomoso) had a much more significant Muslim majority than Ibadan Division in both 1952 and 1963. Ostien, 'Percentages by religion', p. 11.
20. Both Ife and Ilesha divisions had significant Christian majorities in 1952 and 1963. Ostien, 'Percentages by religion', p. 11.
21. These protocols included the need to ensure respondents' consent, anonymity, and ability to withdraw.
22. Team members included Adebayo Adewusi, Rita Ajayi, Tosin Akinjobi, Kehinde Akinduro, Nurudeen Arogundade, Yemi Balogun, and Charles Omotayo.

younger people to offer responses, the team's respectful recourse to senior family members meant that older respondents were slightly more likely than younger ones to provide responses.

Survey team members asked for responses from both men and women at every compound, house, or institution. Different questionnaires were given to men and women to capture practices related to polygyny.[23] We aimed for an equal response rate from men and women, but collected more valid responses from men than from women during our pilot study in Ede (Osun State).[24] In response to this problem, team members explained our expectations to female respondents, but also oversampled women in Ogun State, the next survey location. We eventually found that we could keep track of gender ratios without oversampling.[25] However, our strong focus on Ogun State meant that we have slightly more responses from women than from men overall.

Team members withdrew all but one copy of surveys where answers and responses to open questions that elicited individual narratives were identical. They also withdrew surveys when at least two team members agreed that surveys had not been completed by, or on behalf of, a respondent. Team members also experienced rejection, and respondents refused to complete questionnaires for a number of reasons, including mistaking the team members for tax collectors or government representatives. In some rural communities, survey questionnaires were also collected (but never returned) by individuals selling food where questionnaire paper was later seen being used as food wraps. It is difficult for us to assess in what ways these misunderstandings and local strategies may have contributed to bias within the survey; but again, one of the lessons of this research note is that such experiences provide insights into the politics and social relations of the areas under study.

Completed questionnaires were taken to the University of Birmingham, where Rebecca Jones oversaw their entry (in both Yoruba and English) into an electronic database, and the translation of Yoruba responses into English by a UK-based team.[26] Textual responses are still being translated and categorized.[27] This research note discusses only the socio-demographic

23. The questionnaires differed between men and women only in the part related to marriage, so data were comparable in all other respects. The main survey had an overall total of 165 entry categories for men (who had the option to comment on present marriages of up to four wives) and 152 entry categories for women (who were only asked about their present husband).
24. In several cases, women from the same compound produced identical surveys on which they had agreed internally. We withdrew all but one of such questionnaires.
25. Once we explained clearly that the value of the survey was to capture differences even among women in a compound, we received very few collective responses.
26. Team members working on translations included Oluwakemi Olabode, Olufemi Ogundayo, and Omolara Fasanmi.
27. We are grateful to Olufemi Ogundayo for having taken on this task.

data explored through SPSS and STATA by Khadijeh Taiyari and Giovanni Occhiali.

The KEO survey: bias and respondents' socio-demographic characteristics

In the opening section of the KEO survey we asked respondents to tell us what their religion was. Aware that the complex religious landscape of Yorubaland might mean that respondents did not fit into pre-defined categories, we deliberately left the answer open.[28] Out of 2,819 respondents, only three individuals did not indicate a religion and only six gave idiosyncratic responses.[29] Clearly, the fact that our question presumed the presence of a religion may have discouraged respondents' self-identification as atheist or agnostic, even though the opportunity to answer 'none' was potentially available (and was sometimes used to describe parents' or grandparents' religion). However, the vast majority of respondents made reference to three clear and ostensibly unambiguous religious categories, defining themselves either as Muslim, Christian, or traditionalist.

The unadjusted results of the KEO survey, set out in Table 2, indicate that there was an overall Christian majority of 67.1 percent among our respondents. Roughly a third, or 31.6 percent, of respondents told us they were Muslims and the remaining 1.3 percent of our respondents identified themselves as traditionalists. To ensure better comparison we have excluded from our tables below the nine responses, or 0.3 percent of our respondents, that did not fit into these categories. Missing answers are generally excluded. As Table 2 shows, the raw survey data reflect a number of biases arising from our fieldwork methodology and the geographical bias of the survey.

The separation of survey responses from northern and southern Yorubaland confirms that Christianity is more strongly represented in the southern Yoruba states. This implies a geographical shift in religious identification. According to the 1963 census, the west and centre of Yorubaland, including the current states of Lagos, Ogun, Osun, Oyo and Kwara, were predominantly Muslim, while only the eastern areas of the current states of Ekiti and Ondo were overwhelmingly Christian.[30] The KEO survey confirms the ongoing importance of Islam in northern Yorubaland, but it suggests that Ogun and Lagos states are, like the Yoruba east, predominantly Christian today. In addition, the survey reflects important differences according to geographical location, residence, age, and gender.

28. In the English version of the KEO survey, we used the same formulation as used by the 2011 British Household Census but did not provide any tick boxes.
29. The six responses that did not fit into the three religious categories used in the table included 'Non-affiliate', 'Religion is a believe [belief] and what you think is aspectable [acceptable] for yourself', 'Religion is the thanks we give to Almighty Allah', 'Traditional and Christian', 'I serve God', and 'Means total ways of worship God [sic]'.
30. Ostien, 'Percentages by religion', pp. 10–11.

Table 2. KEO survey respondents' socio-demographic characteristics by current religion

Socio-demographic characteristics	Christian N (%)	Muslim N (%)	Traditionalist N (%)	Total N (%)
All responses	1880 (67.1)	894 (31.6)	36 (1.2)	2819 (100)
Geographical location				
Southern Yorubaland (Lagos, Ogun, Ondo states)	1475 (74.5)	471 (23.8)	34 (1.7)	1980 (100)
Northern Yorubaland (Oyo, Osun, Ekiti, Kwara states)	405 (48.9)	422 (50.9)	1 (0.2)	829 (100)
Total	1880 (66.9)	893 (31.8)	35 (1.3)	2809 (100)
Residence (urban/rural)				
Rural (settlements < 100,000)	744 (76.4)	210 (21.6)	20 (2.1)	974 (100)
Urban (cities and towns > 100,000)	1136 (61.9)	684 (37.3)	16 (0.9)	1836 (100)
Total	1880 (66.9)	894 (31.8)	36 (1.3)	2810 (100)
Age				
Under 25	200 (66.2)	101 (33.4)	1 (0.3)	302 (100)
26–30	273 (66.4)	136 (33.1)	2 (0.5)	411 (100)
31–35	325 (69.9)	136 (29.2)	4 (0.9)	465 (100)
36–40	311 (67.9)	140 (30.6)	7 (1.5)	458 (100)
41–45	257 (67.6)	118 (31.1)	5 (1.3)	380 (100)
46–50	208 (68.2)	92 (30.2)	5 (1.6)	305 (100)
51–55	147 (69.3)	62 (29.2)	3 (1.4)	212 (100)
56–60	65 (72.2)	23 (25.6)	2 (2.2)	90 (100)
61–65	22 (48.9)	21(46.7)	2 (4.4)	45 (100)
66–70	17 (45.9)	17 (45.9)	3 (8.1)	37 (100)
76+	11 (36.7)	19 (63.3)	0 (0.0)	30 (100)
Total	1836 (67.1)	865 (31.6)	34 (1.2)	2735 (100)
Gender				
Female	1090 (72.5)	408 (27.1)	6 (0.3)	1504 (100)
Male	789 (60.5)	486 (37.2)	30 (2.3)	1305 (100)
Total	1879 (66.9)	894 (31.8)	36 (1.3)	2809 (100)

In order to explore these biases, it is important to explore how an adjustment of survey data changes the overall results. As in all calibrations of survey data, re-weighting exercises assume that the KEO distribution of respondents' religion represents the actual distribution of religion. In addition, the quality of adjustments depends on the quality of the available data used for weighting. One of the simplest sampling frames for a survey are population numbers. However, Nigeria's exact population numbers remain disputed. The CIA World Factbook estimates the Nigerian population in 2006 to have been 131.8 million while the World Bank suggests a population of 143.3 million, leaving a difference of almost 12 million people. In the same year the 2006 census data produced by the National

Population Commission of Nigeria affirmed that the country had a population of 140.4 million.[31]

In the absence of an undisputed statistical frame that would enable us to run a quantitative (probability) sampling strategy, the KEO survey cannot produce data considered statistically representative in the strict sense.[32] But as this limitation has affected all recent surveys in the area, a critical engagement with existing data is nonetheless productive. The 2006 census provides information on population, age, and gender at the national, state, and local government levels which allows us to weight the KEO data with survey data specifically produced for the seven states covered by the survey. We also consider adjustments of KEO data with reference to information provided by the World Bank on urbanization and the CIA World Factbook on age and gender for the national level. These adjustments provide clear examples of ways in which raw survey data can be subjected to further critical scrutiny, and they suggest points of connection to broader qualitative literatures on the politics of identity in Africa.

Adjusting for survey biases

An adjustment of the data for the survey's geographical bias offers an important insight into the KEO survey's under-representation of Muslims. An adjustment based on 2006 census data takes into account uneven sampling of the different Yoruba states, including our strong oversampling of Ogun State and our slight oversampling of Osun State. All other states are undersampled, but the most significant undersampling is in Lagos, whose respondents only constitute 5.8 percent of the KEO survey but 30 percent of the population according to the 2006 census.

As Map 1 illustrates, Kwara State includes significant populations that are not primarily Yoruba-speaking. However, neighbouring Kogi State, which is not included in the survey, has several Yoruba-speaking communities. As the exact boundaries of ethnic belonging are disputed, we decided to approximate the population of Yoruba speakers in this area by basing our calculations on the overall population numbers for Kwara State. In Table 3, an adjustment of survey results by state – in other words, as if the sampling had been done reflecting the state population numbers of the 2006 census – suggests that the KEO survey slightly oversampled Christians.

The survey's revelation that respondents from urban environments are more likely to be Muslims than respondents from rural areas reflects the

31. National Population Commission, *2006 Population and housing census, Volume IV population distribution by age & sex (state & local government area)* (Federal Republic of Nigeria, Abuja, 2010).
32. Cf. Charles Teddlie and Fen Yu, 'Mixed methods sampling: A typology with examples', *Journal of Mixed Methods Research* 1, 1 (2007), pp. 77–100.

Table 3. KEO survey results weighted by state population (2006 census)

	Christian (%)	*Muslim (%)*	*Traditional (%)*	Total (%)
Ekiti, Kwara, Lagos, Ogun, Ondo, Osun, Oyo states	64.3	35	0.7	100

fact that responses from the northern Yoruba states, where Islam is more established, were mainly collected from urban environments. However, even in southern Yorubaland the numbers of Muslim respondents from urban areas were higher than those from rural areas. Yet an adjustment for the survey's rural–urban bias is of limited value because World Bank data on Nigeria's rural–urban population divide suggest that only 46 percent of Nigeria's population lived in an urban environment in 2013.[33] As south-west Nigeria constitutes a highly urbanized part of the country, we do not consider this weighting, which would suggest that we undersampled Muslims, indicative. Nor do we have a frame for an alternative adjustment. The urban population rate implied in the KEO survey is 63.3 percent.

Beyond location and residence, our socio-demographic data illustrate that Muslim–Christian difference is clearly associated with age, with Christianity most strongly represented among those between 35 and 60 years of age in 2012–13. This is the age bracket that is over-represented in our survey, while respondents under the age of 30 are under-represented. As a result it is important to adjust responses by age cohort.[34] In Table 4 we offer two adjustments of overall survey results by age, first based on the age pyramid given by the CIA World Factbook for the national level,[35] and then based on the data on age provided by the 2006 census for the seven states covered by the KEO survey only.

As Table 4 shows, both weightings suggest a small over-representation of Christians, with the 2006 census data suggesting a slightly greater bias. As the weighting according to the CIA data is less exact owing to the aggregation at the national level and the use of larger age brackets,[36] and

33. The World Bank, 'Urban population (% of total)', <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS> (23 June 2015).
34. In Lagos, we have no responses from males in the youngest age cohort, which means that the overall adjustment still reflects a slight bias against young (male) respondents.
35. Our adjustment largely replicates the age brackets provided at CIA Factbook, 'Africa: Nigeria', <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html> (12 September 2015).
36. This adjustment is a little uneven, as we were, for ethical reasons, only permitted to collect responses from those aged 18 and above. The CIA age cohorts start with 0–14 years and are followed by 14–25 years. While the first category could be ignored (for our purposes), we have used the same weight for the category of 18–25 year-olds as that of the CIA category 14–25, making this adjustment less indicative than the others. The adjustment also required the

Table 4. KEO survey results weighted by age cohort

Age cohort	Christian (%)	Muslim (%)	Traditionalist (%)	Total (%)
CIA World Factbook, national level	65.8	33	1.2	100
2006 census	65.3	33.4	1.3	100

Table 5. KEO survey results weighted by gender

Gender	Christian (%)	Muslim (%)	Traditional (%)	Total (%)
CIA World Factbook, national level	66.6	32.1	1.3	100
2006 census	66.3	32.3	1.4	100

as the 2006 data on age reflect both the slightly higher life expectancy for south-west Nigeria and the greater attraction of cities like Lagos and Ibadan for young people, we consider it likely that the adjustment by the 2006 census data is more indicative.

Finally, our socio-demographic data point to a remarkable difference in male and female religious identification, with women significantly more likely to identify as Christians than men. Given the oversampling of women in the survey, it is therefore useful to check whether an adjustment according to available data on the gender distribution, again provided by the CIA World Factbook for the national level, changes results. The weightings in Table 5 assume that the overall gender distribution in the area covered by the survey reflects the gender distributions given by the CIA World Factbook for the national level,[37] and the same for the average gender distributions given by the 2006 census for the seven states covered in the survey.

As Table 5 shows, an adjustment of the survey data by gender again indicates a small oversampling of Christian respondents. As in Table 4, the overall differences between these weightings are small, suggesting that our oversampling of women had only a small effect on the overall survey results. However, weighting with the 2006 census data suggests a slightly greater bias toards Christianity in the KEO survey, and we assume that

merging of slightly different age categories, as the CIA age cohorts start a year earlier than the KEO ones. However, the impact of this on the overall result is likely to be small.

37. The overall gender ratio for Nigeria is relatively equitable at 1.04 male(s)/female. However, it is clearly marked as 'estimated'. See CIA Factbook, 'Africa: Nigeria'.

Table 6. KEO survey results weighted cumulatively by state population and age

	Christian (%)	Muslim (%)	Traditional (%)
2006 census for population (state level) CIA World Factbook for age (national level)	67.8	31.6	0.7
2006 census for population and age (both at state level)	64.5	34.8	0.7

Table 7. KEO survey results weighted cumulatively by state population and gender

	Christian (%)	Muslim (%)	Traditional (%)
2006 census for population (state level) CIA World Factbook for gender (national level)	64.3	35	0.7
2006 census for population and gender (both at state level)	63.9	35.5	0.6

their greater geographical precision makes these numbers more indicative than the ones offered by the CIA factbook.

The above adjustments of the KEO survey data all indicate a relatively small under-representation of Muslims (and over-representation of Christians), but as they weighted responses by one factor only it is worth exploring what adjustment for more than one factor at a time reveals. As far as the data upon which the adjustment is based are reliable, a double adjustment can reveal whether and to what degree the survey's bias towards Christianity increases as adjustments for more factors are made.

As Table 6 illustrates, the double adjustments for state population and age, using different national-level and state-level data to weight for age, point in slightly different directions. While the adjustment according to the national-level data suggests an under-representation of Christians by 0.7 percent, the state-level data confirm that the survey under-represents Muslims but do not suggest that bias within the survey is cumulative.

The double adjustment for both state population and gender presented in Table 7 again demonstrates similar results for adjustments with national-level and state-level data for gender. The weighting according to 2006 census data suggests a stronger undersampling of Muslims than in the individual weightings for state population and gender, but still only by 0.5 percent. This suggests that our oversampling of women in Ogun State, where the gendered shift towards Christianity finds strong expression,

Table 8. Range of adjusted KEO survey results

	Muslim (%)	Christian (%)	Traditional (%)
Overall numbers	31.6–35.5	63.9–67.8	0.7–1.4
Variation	3.9	3.9	0.7

affects the survey findings more strongly than is revealed by adjustments for one factor only.

Additional cumulative adjustments for state population, gender, and age do not reveal further cumulative biases within the survey. However, they compound assumptions about the validity of the data used for weighting. In four states where we collected smaller samples, the KEO survey does not include data on all gendered age brackets. This includes the youngest age bracket for males in Lagos State, and three age brackets over 60 for females in Ekiti, Kwara, and Oyo states. Only better data can reveal to what degree the absence of these data has impacted on the adjustments above. However, the impact of the missing data is certain to increase in cumulative adjustment.

Overall, most adjustments of the survey suggest that the Muslim share of the sample is underweighted. Apart from the urban–rural weighting we consider unrepresentative of Yorubaland, the adjustment by state population and age (national-level data) is the only reweighting which gives a higher share to Christians. As Table 8 shows, the re-weightings based on official data suggest that the actual shares of Muslims and Christians differ by less than four percent from the KEO survey findings. Even so, it is possible that our data contain errors that cannot be rectified by adjustment, and aggregate in a manner that we have not recognized.

However, we believe that the consistency of our findings supports our overall argument that Yorubaland has seen a slow shift towards Christianity since 1963. As we set out in the next section, the different biases revealed by our adjustments also suggest that there are important social constellations that support Islam. Moreover, the different factors implicated in the complex relationship between Yoruba Muslims and Christians point to new approaches to the study of Muslim–Christian relations in south-west Nigeria and beyond. One lesson that can be drawn from this is that the critical exploration of survey results can be seen as the starting point for new lines of research.

Trajectories of Muslim–Christian relations

As the KEO survey confirms the relative growth of Christianity in Yorubaland since the 1960s even after various adjustments for its relative

oversampling of Christian respondents, its findings illustrate the potential contribution of quantitative research to qualitative inquiry simply by revealing the cumulative impact of change over decades. A closer look at the biases in the survey points to a number of lines of exploration that engage with, and challenge, existing debates about trajectories of West African religion, Muslim–Christian relations, and religious encounter.

The noticeably stronger increase of Christianity in formerly Muslim parts of southern Yorubaland than in northern Yorubaland suggests that different factors influence religious change in the north and south of south-west Nigeria. As a particular aspect of Muslim–Christian encounter, Muslim–Christian conversion in West Africa has not received much scholarly attention.[38] However, the 'conversion' to Pentecostal Christianity among Christians has been explained as a response to the decline of the central economic role of the state. Especially attractive to successful migrants in large cities, Pentecostal messages reflect and shape the ambitions of self-consciously modern, educated, and urban-based individuals.[39] Certainly, this dynamic might explain the relatively strong historical increase of Christians documented by the KEO survey for the southern Yoruba states, which are dominated by the self-conscious modernity associated with the cities of Lagos and Ibadan.

However, the relatively stronger presence of Muslims in the medium-sized urban environments sampled by the survey indicates that the relationship between urbanity and conversion is more complex. While only Ilorin in Kwara State became an Emirate,[40] most Yoruba Muslim communities are organized at the town level, offering Muslims the opportunity to participate in town politics as Muslims and on behalf of their religious community.[41] The significantly greater resilience of Islam in northern Yorubaland suggests that the creation of exclusively Muslim compounds and quarters, which occurred during the nineteenth century primarily in northern Yoruba towns, also plays an important role in entrenching Islam. Muslim quarters and compounds are home to extended patrilineages and often exclude non-Muslim descendants from important

38. But see Rosalind Hackett, 'Prophets, "false prophets", and the African state: Emergent issues of religious freedom and conflict', *Nova Religio: The Journal of Alternative and Emergent Religions* 4, 2 (2001), pp. 187–212.
39. Ruth Marshall-Fratani, 'Mediating the global and local in Nigerian Pentecostalism', *Journal of Religion in Africa* 28, 3 (1998), pp. 278–315; Birgit Meyer, 'Christianity in Africa: From African independent to Pentecostal-Charismatic churches', *Annual Review of Anthropology* 33 (2004), pp. 447–74; Ruth Marshall, *Political spiritualities: The Pentecostal revolution in Nigeria* (University of Chicago Press, Chicago, IL and London, 2009).
40. See for example, Stefan Reichmuth, *Islamische Bildung und soziale integration in Ilorin (Nigeria) seit ca. 1800* (LIT Verlag, Münster, 1998), pp. 43–53.
41. T. G. O. Gbadamosi, *The growth of Islam among the Yoruba, 1841–1908* (Longman, London, 1978); Peel, *Christianity, Islam, and Orisa-religion*, pp. 152–70.

resources or aspects of decision making. Therefore, those who rely on the patrilineage for their livelihoods are unlikely to abandon Islam.

The survey's revelation of the dramatic shift from Islam towards Christianity among those 60 and younger in 2012–13 – those born in or after 1952 – also indicates that universal primary education, introduced in all Yoruba-speaking states except Kwara in 1955,[42] encouraged conversion. Although the introduction of universal primary education was a secular policy, the dominance of mission education during the colonial period meant that by the 1950s the vast majority of teachers were Christian and often associated successful education with Christianity. While not all children who started school during that period converted, Muslim observers were disconcerted by the fact that many did.[43] The survey data show that within each age bracket the percentages of Muslims and Christians have remained relatively stable since the 1950s. This suggests that many of those who converted as children retained and passed on their Christian identity as they grew older, thus contributing to an incremental growth of Christianity in the overall population. Public health surveys in Nigeria and other African contexts suggest that reproductive rates reflect a number of social distinctions, including religious difference.[44] It is thus possible that the slightly higher numbers of Muslims among younger respondents reflect differential rates of biological reproduction.

In addition to education, decisions about religious identity are likely to reflect both the different possibilities for gendered agency and religious subjectivity encouraged by these religions.[45] In this context, we speculate that women's greater attraction to Christianity reflects both its more explicit recognition of female religiosity and its institutionalization of female religious participation.

42. This educational policy was introduced by the Action Group Government of Chief Obafemi Awolowo, who had become the premier of the then self-governing Western Region in 1954. Reflecting the relative administrative independence of the regions at the time, the policy was specific to the Western Region. It was ended by the military coup of 1966.

43. Cf. D. O .S. Noibi, *Yoruba Muslim youth and Christian-sponsored education* (Shebiotimo Publications, Ijebu-Ode, 1987). The problematic nature of universal primary education for the Muslim community was highlighted by Yoruba Muslim leaders at the time. The conversionary dynamic also occurred in other parts of Nigeria where free primary education was introduced. See Marg Csapo, 'Universal primary education in Nigeria: Its problems and implications', *African Studies Review* 26, 1 (1983), pp. 91–106: p. 101.

44. National Population Commission, *National demographic and health survey 2013* (Federal Republic of Nigeria, Abuja, 2014), pp. 65–80. Like its predecessors, the National Demographic and Health Survey 2013 does not provide direct data on religion and fertility. While fertility data at state and zone level confirm that overall levels of fertility tend to be higher in states and zones with strong Muslim populations, there are exceptions to this trend.

45. Cf. Murray Last, 'Some economic aspects of conversion in Hausaland (Nigeria)', in Nehemia Levtzion (ed.), *Conversion to Islam* (Holmes and Meier, New York, NY and London, 1979), pp. 236–46.

The gendered and generational religious differences illuminated by the KEO survey may be mutually constitutive. The gendered adherence to Islam and Christianity suggests that marriages and relationships between Muslim men and Christian women, which are sanctioned by Islam, are frequent. The slightly higher number of Muslims among younger respondents suggests that, privileging paternal authority, the children of such unions are usually brought up in their fathers' religion. However, slightly higher numbers of Christians among older respondents might indicate that a significant number of young people convert to Christianity when they are financially independent and/or married.

If indeed most Muslim–Christian converts are women, it is not clear how the current trajectory of religious change transforms interreligious relations. As the conversion of Muslim women has no direct impact on the number of compounds and households headed by Muslim men, and consequently of Muslim children, it may explain the relatively low degree of controversy about the overall shift to Christianity. However, the entrenchment of religious difference between Yoruba men and women would challenge the understanding of religious communities as coherent in the sense that they can support independent social reproduction. Clearly an exploration of these conjectures requires further research into the role of religious difference in intimate relationships between the sexes and the generations. Where religious difference is associated with gendered and generational identities it illuminates the boundary between Islam and Christianity as highly permeable and calls for further historical and anthropological study.

Conclusion

Discussing the KEO survey's findings about the shift towards Christianity in south-west Nigeria since the 1960s, this research note offers a number of lessons on survey work, both generally and in the context of producing survey data for qualitative research. The processes and problems of conducting a survey offer important insights into the social reality of a country or region. In the case of the KEO survey, such insights served as a first basis for reflection on possible survey biases. Furthermore, the production of accurate and reliable survey data relies on a careful reflection on the challenges of survey work. An open discussion of research challenges, potential biases, and other adjustments can substantiate overall findings and encourage a careful and critical evaluation of the differences in religious identification. In the KEO survey, the biases that arose from our approach and from the differential engagement of individuals with the survey contributed to our understanding of the importance of geographical location, residence, gender, and age for religious identification.

In addition, the exploration of different sampling frames for calibration offers a useful base both for the confirmation of findings and for critical reflection and analysis. An open discussion of sampling frames (and their limits) illustrates in what ways survey results produced in data-poor contexts may be problematic. The difficulties of finding appropriate sampling frames for the KEO survey can be a useful starting point for researchers planning survey work in Nigeria and other African countries.

Moreover, an open discussion of research challenges, potential biases, and other adjustments can substantiate overall findings and encourage a careful and critical evaluation of survey results. Like qualitative data, surveys are shaped by the context of their production and do not provide results that are unassailable. However, by aggregating and comparing the experiences and attitudes of individuals of very different backgrounds, surveys can provide insights into broader trends that might otherwise be overlooked and which can form the basis of qualitative analysis. In the KEO survey, differences in religious identification according to locality, age, and gender, tentatively pointed to a dynamic relationship at the interpersonal and intergenerational level between Yoruba Muslims and Christians.

Finally, survey results open to critical discussion can serve as the starting point for new lines of qualitative research. The trajectories of religious change and coexistence through the 'dialectics of conversion over generations'[46] revealed by the KEO survey illustrate the potential relevance of quantitative data beyond the constituencies normally served by surveys. If survey data can form the basis for critical debate and reflection, and ultimately for the production of new insights into African historical and social practice, historians, sociologists, and anthropologists of Africa need more of it.

46. David Maxwell, 'Response to Joel Robbins', *Current Anthropology* 48, 1 (2007), pp. 25–6: p. 26.